

REMARKS

The Final Office Action mailed July 9, 2007, has been received and reviewed. Claims 10, 14 through 19, 21, 45, 53 through 55 and 64 through 67 are currently pending in the application. Claims 10, 14 through 19, 21, 45, 53 through 55, 64 and 67 stand rejected. Claim 65 has been canceled without prejudice or disclaimer.

Claims 65 and 66 have been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claims is noted with appreciation.

The proposed amendments to claims 14 through 17, 19, 64 and 66 improve antecedent basis. The proposed amendments to claims 18, 45 and 55 incorporate subject matter indicated as allowable by the Examiner. No new matter has been added.

The proposed amendments to claims 10, 14 through 19, 45, 55, 64 and 66 should be entered by the Examiner because the proposed amendments place the application in condition for allowance. Alternatively, the proposed amendments place the application in better form for appeal.

Applicants respectfully request reconsideration of the application as proposed to be amended herein and in light of the arguments presented herein.

Claim Objections

Claims 14 through 17 and 19 are objected to due to alleged informalities in the claim language. While Applicants disagree with the objections for the reasons set forth in Applicants' Amendment dated April 9, 2007, in order to advance prosecution, each of claims 14 through 17 and 19 has been amended as suggested by the Examiner. In view of the amendments, withdrawal of the objections is respectfully submitted.

35 U.S.C. § 102(e) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 6,912,081 to Bolle *et al.*

Claim 10 stands rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,912,081 to Bolle *et al.* ("Bolle"). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Bolle describes forming a hard mask on a substrate, such as silicon, to define a pattern of mesas. Bolle, column 2, lines 25-29. The hard mask 103 may be formed from silicon nitride or silicon dioxide. *Id.*, column 4, lines 56-57. The mesas 105 described by Bolle are formed by etching unmasked portions of the substrate 101 using tetramethyl ammonium hydroxide (TMAH) mixed with nonylphenol ethoxy ether. *Id.*, column 4, lines 60-67.

Applicants respectfully submit that Bolle does not anticipate independent claim 10, as proposed to be amended, because Bolle does not expressly or inherently describe the element of “exposing a silicon layer on a semiconductor substrate to an etch solution consisting of tetramethylammonium hydroxide (“TMAH”) and at least one organic solvent selected from the group consisting of isopropanol, butanol, hexanol, glycol, glycerol, ethylene glycol, propylene glycol, glycerin, and mixtures thereof.” Rather, Bolle describes etching a portion of a substrate using TMAH mixed with nonylphenol ethoxy ether. *See* Bolle at Abstract; column 4, lines 60-67.

Since Bolle does not describe, either expressly or inherently, each and every element of claim 10, it is respectfully requested that the Examiner withdrawn the rejection of independent claim 10 under 35 U.S.C. § 102(e).

Anticipation Rejection Based on U.S. Patent Publication No. 2005/0104228 to Rigg *et al.*

Claims 18, 19, 21, 45, 53 through 55, 64 and 67 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2005/0104228 to Rigg *et al.* (“Rigg”). Applicants respectfully traverse this rejection, as hereinafter set forth.

Since independent claim 18, as proposed to be amended herein, recites subject matter indicated as allowable by the Examiner, claim 18 is not anticipated by Rigg.

Claims 19 and 21 are each allowable, *inter alia*, as depending from an allowable base claim.

Applicants respectfully submit that Rigg does not anticipate independent claim 45, as proposed to be amended herein, because claim 45 recites subject matter indicated as allowable by the Examiner.

Each of claims 53 and 54 is allowable, *inter alia*, as depending from an allowable based claim.

Applicants respectfully submit that Rigg does not anticipate independent claim 65, as proposed to be amended herein, because claim 65 recites subject matter indicated as allowable by the Examiner.

Claims 64 and 67 are each allowable, *inter alia*, as depending from an allowable base claim.

Thus, withdrawal of the rejections of claims 18, 19, 21, 45, 53 through 55, 64 and 67 under 35 U.S.C. § 102(e) is respectfully solicited, as is allowance of each of these claims.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Bolle, in View of U.S. Patent Publication No. 2005/0065050 to Starzynski

Claims 14 through 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bolle, in view of U.S. Patent Publication No. 2005/0065050 to (“Starzynski”). Applicants respectfully traverse this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, there must be “a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements” in the manner claimed. *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Finally, to establish a *prima facie* case of obviousness, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367

(Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

The teachings of Bolle are as summarized above.

Starzynski describes silicon etchants that include “at least one of potassium hydroxide or tetramethyl ammonium hydroxide; at least one additive . . . ; and an aqueous environment that comprises at least one solvent or solvent blend.” Starzynski at paragraph [0026]. The additive is a glycol or glycol-based derivative, such as glycerol, glyceride, glycerine, alkylene glycols (ethylene glycol, propylene glycol). *Id.* Starzynski teaches hydrocarbon solvents, such as ketones, carbonate-based compounds, water, ethers, and amines. *Id.*, paragraph [0036].

Since claims 14 through 17 depend from claim 10, each of claims 14 through 17 includes all of the limitations of claim 10. However, Bolle does not teach or suggest the limitation of “exposing a silicon layer on a semiconductor substrate to an etch solution consisting of tetramethylammonium hydroxide (“TMAH”) and at least one organic solvent selected from the group consisting of isopropanol, butanol, hexanol, glycol, glycerol, propylene glycol, ethylene glycol, glycerin, and mixtures thereof,” for the reasons previously discussed. Although Starzynski teaches an etchant composition for removing silicon, the etchant composition includes TMAH in combination with *both* an additive and a hydrocarbon solvent, such as a ketone, a carbonate-based compound, water, an ether, and an amine. Because Starzynski does not teach or suggest that its etchant composition consists of the components recited in claim 10, it is respectfully submitted that Starzynski does not cure the deficiencies of Bolle. Thus, each of claims 14 through 17 is allowable as depending from allowable claim 10.

Accordingly, withdrawal of the obviousness rejection of claims 14 through 17 is respectfully requested, as is allowance of each of these claims.

Objections to Claims 65 and 66/Allowable Subject Matter

Claims 65 and 66 stand objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. The limitations of claim 65 have been incorporated into independent claims 45 and 55.

ENTRY OF AMENDMENTS

The proposed amendments to claims 10, 14 through 19, 45, 55, 64 and 66 should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add new matter to the application. Further, the amendments do not raise new issues or require a further search. Finally, if the Examiner determines that the amendments do not place the application in condition for allowance, entry is respectfully requested upon filing of a Notice of Appeal herein.

CONCLUSION

Claims 10, 14 through 19, 21, 45, 53 through 55, 64, 66 and 67 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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